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Current Economic Analysis I-**28**

Industrial Fishery Products

Market Review and Outlook

Industry and Consumer Services Division

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INDUSTRIAL FISHERY PRODUCTS MARKET REVIEW AND OUTLOOK

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SUMMARY

Supplies of industrial fishery products rose sharply in the third quarter of 1976, primarily on the strength of increased domestic production. A 30-percent increase in menhaden landings in the Gulf and a 65-percent gain in Atlantic catches allowed production of fish meal to rise 22 percent from a year earlier. Production of fish oil was up 7 percent, and production of solubles increased 39 percent.

The third quarter gain in domestic production was particularly significant because imports, which had led the first half gain in supplies, were down from year-earlier levels. Apparently, continuing low production in Peru, and high demand and prices in Europe caused imports of fish meal during July-September to slip 2 percent from 1975.

The improvement in total supplies during the third quarter, the development of some price resistance for fish meal in domestic markets, and lower prices of soybean meal caused prices to weaken somewhat in August. The price of menhaden meal, for example, fell from $385 per short ton in July to an average of $324 in August. Nevertheless, the August price was still 32 percent above that quoted in 1975. Solubles and oil had similar price movements.

Short supplies and rising demand in Europe, however, stimulated demand for U.S. exports of fish meal and oil, thereby buoying the market for those products. With exports of fish meal rising sharply, prices of menhaden meal rebounded to $361.25 in September, and prices of fish oil recovered the 1.4 cents per pound decline registered in August. Continuing high numbers of chicks on feed caused prices of fish meal to stabilize at $361.88 in October, 6 percent below July but about 36 percent above a year earlier.

The outlook is for lower supplies, but fairly strong overall demand and firm prices. Stable to lower landings will limit production in the near future. Imports will also be off in response to a ban on exports from Peru, and continuing high demand in Europe. Additional increases in exports to Europe will also reduce quantities available in the United States.

Prices will remain firm, although demand in domestic markets may weaken some. Lower supplies and high export demand will likely cause prices to remain at current levels through the early part of 1977.

FISH MEAL

REVIEW

Supplies of fish meal during the first three quarters of 1976 improved considerably from last year. Domestic production and imports increased to 358,300 tons 1/ during the period--up 15 percent from 1975 and 23 percent above 1974.

Domestic production improved

Unlike the first half of the year, when the gain in supplies was related to relatively high imports, the increase during the third quarter was the result of heavier production of menhaden meal. Menhaden meal production increased 29 percent from last year to 132,900 tons (43 percent above the last 10-year average). Production from anchovy and unclassified species declined 12 percent. Total domestic production of fish meal in the third quarter was about 153,300 tons--23 percent above last year and 30 percent above the last 10-year average.

The third quarter increase in menhaden meal production was the result of sharply higher landings of menhaden during the period. Menhaden landings increased substantially in the Gulf and the Atlantic as the weather improved significantly. A 30-percent increase in Gulf landings during August and September caused the total catch in that area during the first 9 months to be 5 percent above a year ago. Atlantic menhaden landings, after a poor first half, increased 65 percent during the third quarter, resulting in a 33-percent gain over a year ago for the January-September period.

Tuna meal production for the year to date decreased to 25,400 tons (the lowest since 1971) despite record high landings of tuna and higher meal prices. Although prices of tuna meal were substantially above last year (up 28 percent), newly introduced canning machinery increased the percentage of tuna used for canning and, therefore, reduced amounts available for fish meal production.

For the fourth year in a row, domestic producers of fish meal supplied the major portion for the U.S. market. By the end of the third quarter, 249,300 short tons (with a market value of about $82 million) were produced in the United States while only 108,900 tons were imported. In contrast, the average production for the past 10 years was 212,300 tons and imports were 272,400 tons (fig. 1).

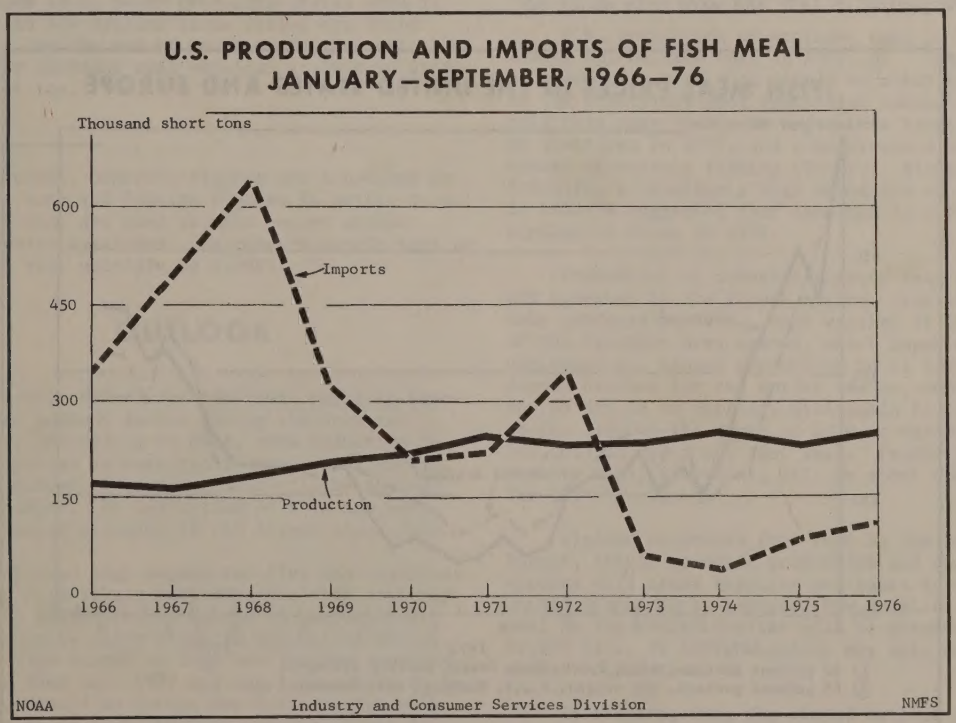

Figure 1

Imports low

The relatively larger share supplied by domestic producers this year, as in the past three years, was mainly the result of low imports. The 51,900 tons received in the third quarter was off 45 percent from the average amount imported during the quarter from 1966-75. The major factors responsible for the reduced imports this year include low shipments from Peru, and higher prices in Europe than in the United States which apparently diverted supplies to European markets.

In the first 9 months, U.S. imports from Peru were 60,600 tons, compared to an average of 254,100 tons from 1963 to 1973. The low quantity received from Peru this year was the result of low Peruvian stocks at the beginning of the year and continuing low production.

On Junuary 1, 1976, Peru (the major world producer and supplier) had only 40,000 metric tons of fish meal in stock, compared to about 219,000 metric tons the year before. Therefore, to assure an adequate domestic supply, the Peruvian Government continued the suspension of exports established on December 1, 1975. The export suspension was lifted on April 1; however, landings, and therefore, exports, continued to be low. Landings during the first 7 months were off 3 percent from the same period in 1975 and were only about 50 percent of catches in a more normal year such as 1967. Production of Peruvian fish meal in January-July 1976 was 559,600 metric tons, down 10 percent from a year ago.

Supplies in the major exporting countries other than Peru were unable to offset the decline in Peru. Although production in these countries increased substantially, lower stocks at the beginning of the year caused the total quantity of fish meal available in these countries to be about the same as last year. Combined with the lower amount available in Peru, total supplies in the major exporting countries were 13 percent below the first 7 months in 1975.

The third quarter decline in imports apparently was also associated with a shift in world trade patterns. Lower world supplies and a substantial improvement in European demand for protein feeds caused prices in Europe to surpass those in the United States in July, thereby attracting supplies to Europe rather than U.S. markets. The price of fish meal in Hamburg, West Germany, during the last week in July, for example, was $375 per ton, compared to $352 per ton in the United States. By September, the average Hamburg price had risen to $403 per ton and the price in the United States was $361.46 (fig. 2).

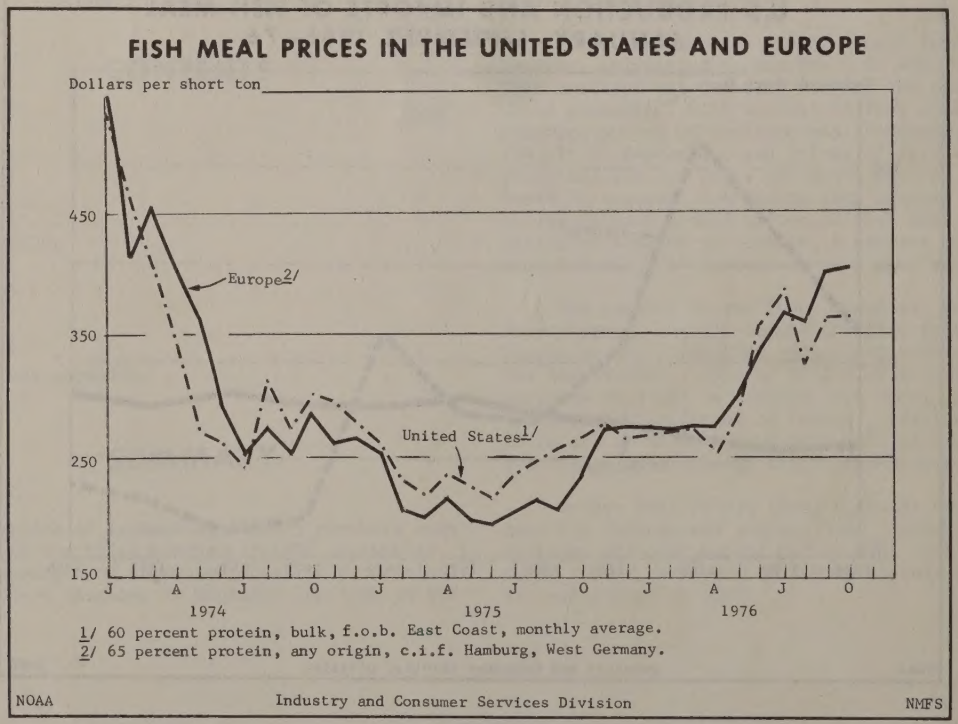

Figure 2

The higher price in Europe not only caused imports of fish meal to the United States to decline, but also caused U.S. exports to increase sharply. Exports during the third quarter rose to 7,000 tons compared with 600 tons in 1975.

Prices slip but still high

In domestic markets during the third quarter, rising domestic production and some resistance to relatively high prices caused the price of menhaden meal to decline in late July and August. The decline in menhaden meal prices was associated with the reduction in prices for soybean meal. Soybean meal prices (50 percent protein) dropped from an average of $207.90 per short ton in July to $177.00 at the end of September. Buyer resistance to the high level of prices and the disclosure by the Department of Agriculture that carryover stocks of soybeans were the second largest on record were major reasons for the temporary price decline for soybean meal.

Prices of fish meal and soybean meal, however, continued to be high and rose somewhat in September. The $37 increase for fish meal in September was particularly associated with the sharp increase in export demand by European buyers and the continuation of large number of poultry on feed in the United States. Chick placements in 21 major producing States rose 11 percent to 828 million birds during the third quarter. By the end of October, the nominal price for menhaden meal remained at $360 to $365 per short ton.

1/ In general, domestic figures are expressed in short tons and foreign figures in metric tons. Short tons are used in this report unless otherwise specified. To convert metric tons to short tons multiply by 1.1023.

OUTLOOK

Domestic demand for fish meal may slip somewhat from present levels during the next two quarters. According to USDA, some reduction in broiler prices is expected in the coming months, and the number of birds on feed will be accordingly reduced. An indication of this has been the increased slaugher of old layers since June.

Continued high demand for fish meal overseas, however, will likely buoy domestic fish meal markets into 1977. Prices quoted in Hamburg will continue to be above those in the United States. With a large number of hogs and poultry expected to be on feed into 1977 and supplies likely to be limited, demand in Europe for U.S. exports will continue to be high, thereby causing prices in the United States to be at or slightly above current levels through the first quarter of 1977.

On the supply side, the quantity of fish meal available for the U.S. market will probably be lower during the balance of this year and the first half of 1977. This will primarily be the result of lower imports, a further reduction in tuna meal production, and continuing high domestic exports.

Lower imports from Peru will be the predominant factor in the decline in supplies. Imports from Peru will be limited during the rest of this year, because the Peruvian Fish Meal and Oil Sales Organization halted sales at the beginning of October. Exports obtained from catches during the rest of 1976, therefore, will be limited to fulfilling existing contracts or prior long-term agreements.

The availability of fish meal from Peru throughout next year will likely be limited by continuing low production. A strike by fishermen, which postponed the October 18th start of the second half of the 1976 season, will undoubtedly reduce production for the rest of this year. Production also will be limited by resource problems. 2/ The combined effect of the strike by fishermen, the reduced level of the resource, and a recent intrusion of sardines in areas normally supporting only anchovies could hold production of fish meal in Peru to or below that of the past 3 years.

U.S. production of menhaden meal in 1977 will likely approximate that in 1976. 3/ Catches of menhaden next year will likely be about the same as the relatively good quantities landed in the Gulf this year on the strength of a large abundance of juveniles in 1976, and a maintenance of the number of vessels fishing (80-82). Along the Atlantic, a relatively high abundance of juveniles in 1975-76 suggested that landings in 1977 will be similar to those in 1976.

Production of domestic anchovy meal will be off somewhat in the fourth quarter from the 14,000 tons produced in 1975. Poor weather at the start of the Southern area season, which began on September 15, caused production to be low. California catches for the entire season, expected to end on May 15 or earlier, will again be limited to the 115,000-ton quota of 1974, compared to the 165,000-ton quota set last year. Production of anchovy meal, therefore, will be about the same as the 1974/75 season.

Limited shipments from Peru in the near future, stable domestic production and increased exports will cause supplies available in the United States to be reduced. New supplies of fish meal in the fourth quarter will be between 70,000-80,000 tons. In 1977, supplies may only reach about 400,000 tons.

In the long run, the demand outlook is somewhat clouded by the construction of a methionine plant in Louisiana for production of granular

methionine used as a livestock feed supplement. It will substantially increase the availablilty of this amino acid, for which fish meal is valued at present. This plant is expected to have a production capacity of 17,000 tons a year. The increased methionine supply may make it possible to substitute soybean meal for fish meal in feed formulas requiring high methionine levels. Actual substitution, however, is not likely to occur in the near future, because the methionine in fish meal costs only a fraction of the $1.20- $1.25 per pound quoted for the synthetic product.

2/ G.L. Kesteven, Recovery of the Anchovy and "El Nino". CUEA Newsletter Vol. 5 NO. 3 Duke University Marine Lab. Beaufort, N.C.

3/ Preliminary Review of the 1976 Atlantic and Gulf Menhaden Fisheries and Outlook for 1977, NMFS Atlantic Estuarine Fishery Center, Beaufort, N.C.

FISH SOLUBLES

REVIEW

The market for fish solubles (31 percent protein) continued to be strong during the third quarter of 1976. Despite a significant increase in production, prices of solubles remained relatively firm, particularly when compared to the prices for protein meals.

Demand improves

The strength of the market can be largely attributed to a recent improvement in demand. A sharp increase in the number of chicks and hogs on feed apparently stimulated an improvement in demand for this product as well as other protein meals. In addition, relatively low prices of solubles in the early months of 1976 caused feed mixers to increase the use of fish solubles in feed formulas (based on least-cost analysis).

The strength of demand is reflected in the rapid rise in prices this year. From an average of $79.38 per short ton in April, the price of solubles rose to a peak of $138.75 in July--more than doubled the price quoted a year earlier. This is further noteworthy in that the price of solubles increased much more than prices for competing products. As a result, the price ratio of menhaden meal to menhaden solubles fell sharply during this period. Whereas menhaden meal prices were 3.19 times qreater than solubles in April, they were only 2.77 times higher by July.

Like the other protein feed products, the price of solubles slipped somewhat in August and September. However, soluble prices remain extremely high and those declines were generally in line with the reduction in the price of menhaden meal.

Production up sharply

Production of fish solubles in the third quarter was one of the highest on record, thereby reversing the poor production during the second quarter. The amount produced during July to September was 68,800 tons--up 39 percent from last year. The recent increase caused total production during the first three quarters of the year to reach 115,600 short tons compared to the 104,300 short tons produced during the same period in 1975. As for fish meal and oil, the third quarter gain in production was the result of the substantial increase in menhaden landings.

OUTLOOK

Production of fish solubles will likely decline from year-ago levels in the last quarter of 1976. Poor fishing weather in October and the end of the Gulf menhaden season on October 12 will be the primary factors causing the expected decline. Total production during the fourth quarter, therefore, will probably be about 20,000 tons, or 3,500 less than last year.

Prices of solubles will likely remain firm in the coming months. With production expected to decline and soybean meal prices unlikely to decline from October levels in the near future, the price of solubles will remain firm and the relationship between solubles and protein meals is not expected to widen.

FISH OIL

REVIEW

The market for fish oil generally improved in the third quarter of 1976. Production rose moderately from last year and prices increased significantly. Domestic utilization slipped somewhat; however, higher foreign demand and increased exports supported the overall market.

Exports increase

Exports increased sharply in the third quarter after being down in the first half of the year. Whereas exports had been off 35 percent from a year earlier in the first half, the quantity shipped overseas increased more than 62 percent during July-September. The recent gain in exports was primarily associated with a shortage of fish oil in European countries brought about by a ban on fish oil exports by Peru since June, and higher prices for fish oil in Europe than in the United States. The shortage prompted prices in Europe to rise from 14.8 cents per pound in April to 18.6 cents in September. Prices in Europe moved above those in the United States in June and continued to be higher through September, thereby providing the incentive for the third quarter rise in U.S. exports (fig. 3 and 4).

Prices rise

The sudden increase in export demand also prompted an increase in domestic prices. Whereas the price for menhaden oil had been stable through the first half at 15.2 to 15.4 cents per pound, it rose to 18 cents in July. Despite some temporary weakness in August, prices moved up to 18.7 cents in October.

The rise in prices, however, apparently had an adverse effect on domestic utilization in the third quarter. Utilization had recorded a substantial gain in the first half; however, the amount utilized in the third quarter was off about 15 percent from last year to 9.7 million pounds. Nevertheless, domestic utilization during the first three quarters of the year was 29.5 million pounds, 12 percent above a year earlier.

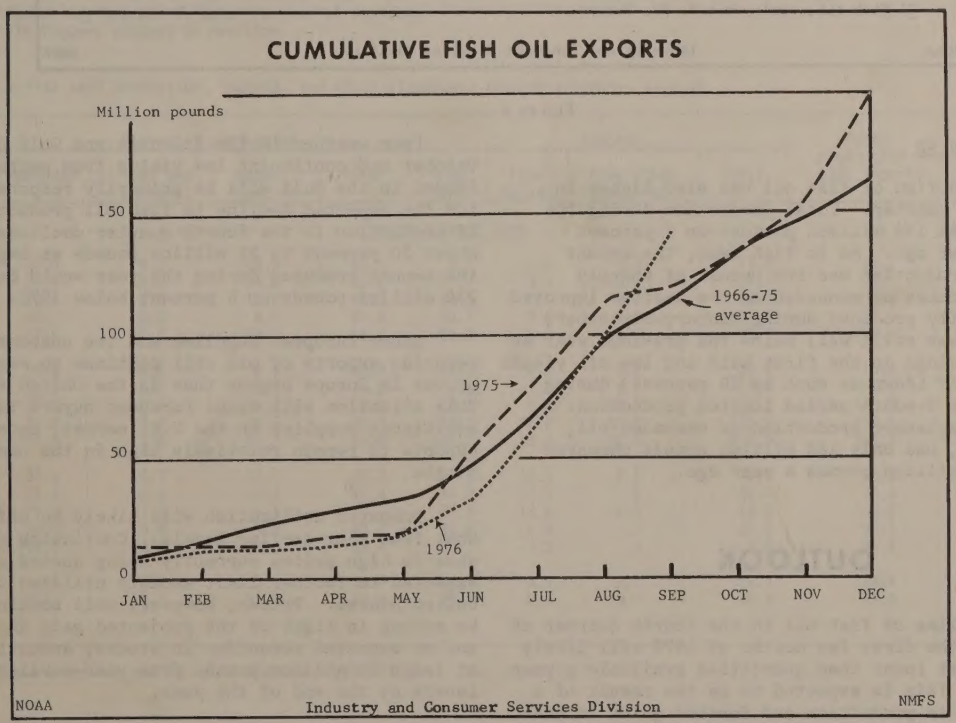

Figure 3

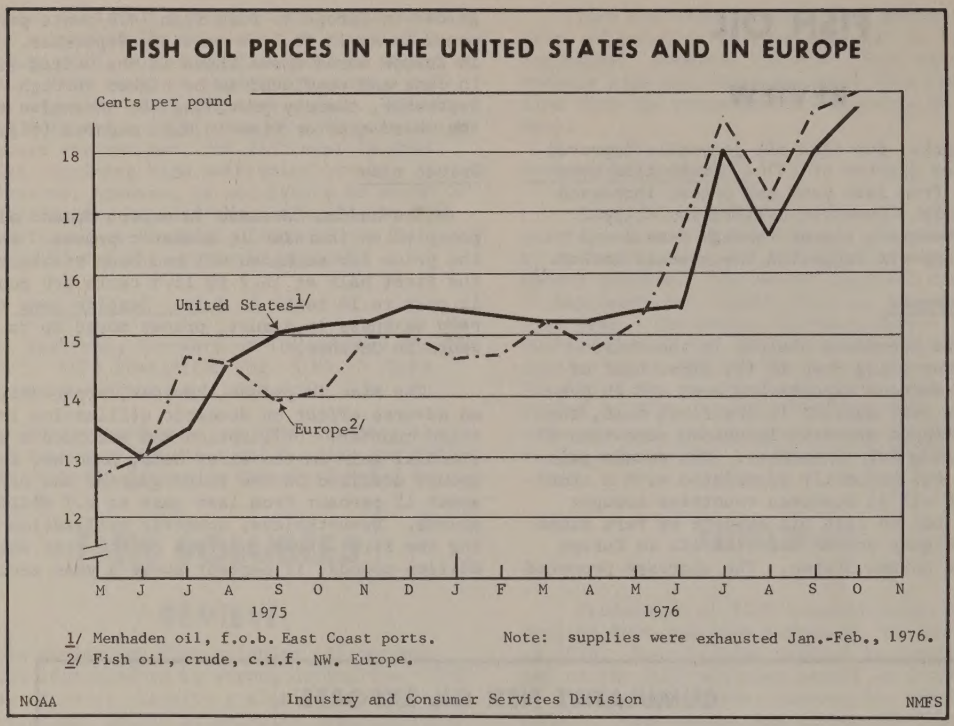

Figure 4

Production up

Production of fish oil was also higher in the third quarter. Total production during the quarter was 138 million pounds--up 7 percent from a year ago. As in fish meal, the recent gain in production was the result of sharply higher catches of menhaden as the weather improved. The quantity produced during January-September; however, was still well below the previous year as lower landings in the first half and low oil yields in the Gulf (down as much as 20 percent) during the entire 9-month period limited production. January-September production of menhaden oil, therefore, was only 188 million pounds compared to 195.7 million pounds a year ago.

OUTLOOK

Supplies of fish oil in the fourth quarter of 1976 and the first few months of 1977 will likely be somewhat lower than quantities available a year earlier. This is expected to be the result of a reduction in production and further gains in exports, causing stocks at year's end to be well below those last year.

Poor weather in the Atlantic and Gulf during October and continuing low yields from menhaden landed in the Gulf will be primarily responsible for the expected decline in fish oil production. If production in the fourth quarter declines about 20 percent to 25 million pounds as expected, the amount produced during the year would be about 230 million pounds or 6 percent below 1975.

Short European supplies and the suspension of Peruvian exports of oil will continue to keep prices in Europe higher than in the United States. This situation will cause European buyers to seek additional supplies on the U.S. market, causing exports to remain relatively high in the coming months.

Domestic utilization will likely be off somewhat from year earlier levels. Continuing resistance to high prices currently being quoted are expected to further limit amounts utilized in the United States. Prices, however, will continue to be strong in light of the projected gain in exports and an expected reduction in stocks, amounting to at least 20 million pounds from year-earlier levels by the end of the year.

STATISTICAL APPENDIX

Table A1.--Fish meal production, imports, and chick placement, January-September, 1959-76

Year	Fish meal production				Imports				Total supplies	Chick placement
	Menhaden	Tuna and mackerel	Other species	Total	From Peru	From Canada	From other countries	Total		
	Thousand short tons									Million birds
1959	186.9	17.2	27.6	231.7	46.2	34.0	39.7	119.9	351.6	1,289.3
1960	183.8	20.7	21.7	226.2	51.1	27.5	18.7	97.3	323.6	1,347.0
1961	218.1	15.4	18.7	252.2	104.9	31.2	23.4	159.5	411.7	1,523.0
1952	199.0	20.6	29.9	249.5	156.1	33.8	18.8	208.7	458.2	1,533.8
1963	156.6	16.1	26.5	199.2	225.1	39.6	33.1	297.8	497.0	1,573.5
1964	143.5	15.5	39.2	198.2	285.8	42.8	27.3	355.9	554.1	1,654.0
1965	154.4	18.7	35.0	208.1	204.3	32.6	12.3	249.2	457.3	1,804.4
1966	107.3	19.4	43.8	170.4	216.5	35.3	94.1	345.9	516.4	1,985.7
1967	97.3	21.2	47.2	165.7	327.9	36.1	104.1	468.1	633.8	2,003.3
1968	115.4	21.8	44.3	181.5	479.5	45.8	111.3	636.6	818.1	2,006.7
1969	138.0	21.2	43.7	202.8	203.8	51.4	66.0	321.2	524.0	2,151.8
1970	167.0	20.3	27.3	214.6	135.2	57.6	22.7	215.5	430.1	2,314.0
1971	199.6	21.5	24.7	245.8	157.1	44.8	16.4	218.3	464.0	2,274.7
1972	168.6	33.4	27.5	229.5	306.4	20.7	12.0	339.1	568.6	2,383.3
1973	168.9	30.9	30.6	230.4	41.8	17.2	1.9	60.9	291.0	2,303.8
1974	189.1	36.4	27.4	252.9	13.6	21.4	3.6	38.6	291.5	2,281.6
1975	170.4	27.8	32.6	230.8	48.1	25.6	6.2	79.9	310.7	2,271.7
1976	196.4	25.4	27.5	249.3	60.6	27.3	21.0	108.9	358.3	2,523.8

Note: Figures may not add to total because of rounding.
1976 figures subject to revision.

Table A2.--Fish meal production, imports, and chick placement, October-December, 1959-76

Year	Fish meal production				Imports				Total production plus imports	Chick placement
	Menhaden	Tuna and mackerel	Other species	Total	From Peru	From Canada	From other countries	Total		
	Thousand short tons									Million birds
1959	37.0	8.2	19.9	65.1	3.7	5.0	4.3	13.0	78.1	343.4
1960	34.6	5.8	14.8	55.2	17.7	3.4	13.8	34.3	89.5	391.3
1961	29.5	5.8	13.0	48.3	46.6	7.0	4.7	58.3	106.6	393.5
1962	40.7	6.0	4.8	51.5	30.1	9.0	4.5	43.6	95.1	465.6
1963	27.6	10.9	10.3	48.8	60.3	11.4	6.8	78.5	127.4	487.2
1964	16.9	5.6	4.4	26.9	62.3	12.0	8.9	83.2	110.1	507.8
1965	21.6	6.7	6.0	34.2	5.5	11.2	4.7	21.4	55.6	575.2
1966	27.7	5.9	8.4	42.0	60.2	8.3	33.4	101.9	143.9	616.0
1967	21.8	4.3	9.6	35.7	114.7	10.5	58.2	183.4	219.1	598.5
1968	27.8	7.0	10.7	45.5	156.5	19.3	42.9	218.7	264.2	629.7
1969	21.5	5.7	14.1	41.3	14.3	16.4	6.5	37.2	78.5	705.0
1970	21.6	6.4	14.4	42.4	18.0	17.9	.2	36.0	78.4	694.9
1971	21.4	7.8	7.9	37.1	42.5	12.8	9.6	64.9	102.0	716.5
1972	25.0	9.8	9.8	44.6	45.9	6.9	.1	52.9	97.5	726.9
1973	19.9	13.0	16.0	49.0	-	7.3	.3	7.6	56.6	725.6
1974	14.8	11.8	12.1	38.7	15.7	8.9	5.1	29.7	68.4	654.3
1975	21.0	9.4	18.1	48.5	27.4	8.4	2.7	38.5	87.0	725.8
1976										

Note: Figures may not add to total because of rounding.

Table A 3.--Production and imports of fish meal in the United States by month, 1966-75 average, and 1975-76

Time period	Production			Imports			Total		
	1966-75 average	1975	1976	1966-75 average	1975	1976	1966-75 average	1975	1976
	Thousand short tons								
January	4.4	6.7	6.3	25.7	1.7	4.2	30.1	8.4	10.5
February	4.0	4.7	2.8	23.5	0.7	2.5	27.5	5.4	5.3
March	5.2	5.6	6.4	28.9	1.5	8.0	34.1	7.1	14.4
1st quarter	13.6	17.0	15.5	78.1	3.9	14.7	91.7	20.9	30.2
April	12.0	11.2	15.9	34.6	17.1	6.0	46.6	28.3	21.9
May	27.4	35.6	22.7	30.1	2.4	21.8	57.5	38.0	44.5
June	41.4	42.6	42.0	34.6	3.6	14.6	76.0	46.2	56.6
2d quarter	80.8	89.4	80.6	99.3	23.1	42.4	180.1	112.5	123.0
July	47.4	53.5	54.4	34.0	24.9	13.1	81.4	78.4	67.6
August	41.6	38.3	52.9	32.0	14.3	12.6	73.6	52.7	65.5
September	28.9	32.5	45.9	29.0	13.8	26.2	57.9	46.3	72.1
3d quarter	117.9	124.5	153.3	95.0	53.0	51.9	212.9	177.4	205.2
October	18.6	23.2		27.1	13.4		45.7	36.6	
November	14.2	13.5		23.1	22.6		37.3	36.1	
December	9.6	11.8		26.8	2.5		36.4	14.3	
4th quarter	42.4	48.6		77.0	38.5		119.4	87.1	
Total	254.7	279.2		349.5	118.4		604.1	397.6	

Note: Production excludes meal from shellfish. 1976 figures subject to revision.
Figures may not add to total because of rounding.

Table A4.--U.S. fish meal production by species, by month, 1966-75 average, and 1975-76

Time period	Anchovy			Menhaden			Tuna and mackerel			Unclassified		
	1966-75 average	1975	1976	1966-75 avarage	1975	1976	1966-75 average	1975	1976	1966-75 average	1975	1976
	Thousand short tons											
January	1.3	3.1	3.3	0.1	1/	0.3	1.9	2.6	2.1	1.1	1.0	0.5
February	0.8	1.5	0.4	-	-	-	2.0	2.4	1.8	1.2	0.9	0.7
March	0.5	0.7	2.0	-	-	-	3.0	3.6	3.4	1.7	1.3	1.1
1st quarter	2.6	5.2	5.7	0.1	-	0.3	6.9	8.6	7.3	4.0	3.2	2.3
April	1.2	3.4	3.4	4.6	3.2	8.8	3.4	3.3	2.5	2.8	1.4	1.3
May	1.0	3.3	0.8	20.3	27.5	17.5	3.0	2.2	2.3	3.1	2.6	2.1
June	-	-	-	34.1	37.0	36.9	3.2	3.5	3.0	4.1	2.1	2.1
2d quarter	2.2	6.7	4.2	59.0	67.7	63.2	9.6	9.0	7.8	10.0	6.1	5.5
July	0.1	-	-	39.1	47.3	48.6	3.1	3.5	3.3	5.1	2.8	2.6
August	0.1	-	-	33.2	29.9	46.5	3.2	3.7	3.3	5.1	4.8	3.1
September	0.8	1.7	1.2	20.9	25.5	37.8	2.8	3.1	3.8	4.4	2.2	3.1
3d quarter	1.0	1.7	1.2	93.2	102.7	132.9	9.1	10.3	10.4	14.6	9.7	8.8
October	2.2	5.3		10.7	12.7		3.0	3.3		2.7	1.9	
November	2.3	3.6		7.8	5.5		2.5	3.0		1.6	1.3	
December	2.0	5.1		3.7	2.8		2.6	3.1		1.3	0.8	
4th quarter	6.5	14.0		22.2	21.1		8.1	9.4		5.6	4.0	
Total	12.3	27.7		174.4	191.4		33.5	37.2		34.5	23.0	

1/ Included with unclassified.
Note: Production excludes meal from shellfish. 1976 figures subject to revision.
Figures may not add to total because of rounding.

Table A5.--U.S. imports of fish meal by country of origin, by month, 1966-75 average, and 1975-76

Time period	Canada			Chile			Norway			Peru			Other countries		
	1966-75 average	1975	1976	1966-75 average	1975	1976	1966-75 average	1975	1976	1966-75 average	1975	1976	1966-75 average	1975	1976
	Thousand short tons														
January	3.1	1.6	1.4	0.7	-	-	2.3	-	2.4	18.8	-	-	0.8	0.1	0.3
February	2.7	0.7	2.0	0.8	-	-	2.3	-	0.6	17.2	-	-	0.5	-	-
March	3.7	1.5	2.6	3.3	-	-	1.3	-	3.5	20.3	-	-	0.3	-	1.9
1st quarter	9.5	3.8	6.0	4.8	-	-	5.9	-	6.5	56.3	-	-	1.6	0.1	2.2
April	3.4	2.9	3.1	3.5	5.0	-	1.3	-	2.9	26.1	9.2	-	0.3	-	-
May	3.2	2.4	3.4	3.1	-	-	1.0	-	0.6	22.1	-	17.6	0.7	-	0.2
June	3.3	3.5	2.8	3.2	-	-	1.0	-	2.7	26.8	-	9.1	0.3	-	-
2d quarter	9.9	8.8	9.2	9.8	5.0	-	3.3	-	6.1	75.0	9.2	26.7	1.3	-	0.2
July	4.5	4.8	3.9	1.9	-	-	1.5	-	-	25.3	20.0	6.6	0.8	-	2.6
August	5.8	3.1	4.5	4.5	-	-	1.8	-	-	19.4	10.2	6.9	0.5	1.1	1.1
September	5.8	5.1	3.6	1.9	-	-	4.2	-	-	16.9	8.7	20.4	0.2	-	2.3
3d quarter	16.1	13.0	12.0	8.3	-	-	7.5	-	-	61.6	38.9	33.9	1.5	1.1	6.0
October	5.5	4.1		3.0	-		2.3	-		16.1	9.3		0.2	-	
November	3.2	2.3		2.9	2.3		3.1	-		13.7	18.1		0.2	-	
December	2.9	2.0		2.3	0.4		1.5	-		19.8	-		0.3	-	
4th quarter	11.6	8.4		8.2	2.7		6.9	-		49.6	27.4		0.7	-	
Total	47.3	34.0		31.3	7.7		23.5	-		242.5	75.5		4.9	1.2	

Note: Figures may not add to total because of rounding.

Table A6.--U.S. exports of fish meal, by month, 1972-76

Time period	1972	1973	1974	1975	1976
	Thousand short tons				
January	-	3.0	8.9	2.0	1.5
February	0.3	1.6	8.8	3.4	0.2
March	0.3	2.6	1.1	0.9	0.3
1st quarter	0.6	7.2	18.8	6.3	2.0
April	0.1	3.0	3.9	0.6	2.7
May	-	0.5	1.9	0.3	0.6
June	0.1	3.2	3.3	1.2	0.2
2d quarter	0.2	6.7	9.1	2.1	3.5
July	0.3	2.4	7.3	0.1	1.7
August	0.4	1.1	8.9	0.1	2.4
September	1.9	0.8	8.0	0.4	6.4
3d quarter	2.6	4.3	24.2	0.6	10.5
October	1.7	3.5	1.7	0.8	
November	1.8	3.7	0.6	1.2	
December	3.6	11.3	1.0	0.9	
4th quarter	7.1	18.5	3.3	2.9	
Total	10.5	36.7	55.5	11.8	

Note: Figures may not add to total because of rounding.

Table A7.--Production of fish meal in seven major exporting countries, January-July, 1975-76

Country	1975	1976	Percentage of total production		Percentage change from 1975
			1975	1976	
	-Thousand metric tons-		-Percent-		
Angola	52.5	1/	3.6	1/	1/
Chile	61.9	130.4	4.6	8.9	+ 110.7
Denmark 2/	171.8	180.0	11.9	12.3	+ 4.8
Iceland	105.5	79.1	7.3	5.4	- 25.0
Norway	166.8	279.7	11.5	19.1	+ 67.7
Peru	667.3	599.6	46.1	41.0	- 10.1
South Africa	221.6	195.0	15.3	13.3	- 12.0
Total	1,447.4	1,463.8	100.0	100.0	+ 1.1

See footnotes at end of table 9

Table A8.--Export of fish meal from FEO countries and Denmark, January-July, 1975-76

Country	1975	1976	Percentage of total exports		Percentage change from 1975
			1975	1976	
	-Thousand metric tons-		-Percent-		
Angola	39.2	1/	3.8	1/	1/
Chile	66.1	105.5	6.4	11.2	+ 59.6
Denmark	163.1	166.0	15.8	17.7	+ 1.8
Iceland	86.9	69.9	8.4	7.4	- 19.6
Norway	151.8	262.1	14.7	27.9	+ 72.7
Peru	438.0	301.3	42.5	32.1	- 31.2
South Africa	85.4	35.1	8.3	3.7	- 48.9
Total	1,030.5	939.9	100.0	100.0	- 8.8

See footnotes at end of table 9

Table A9. --FEO fish meal stocks held, August 1, 1975 and 1976

Country	1975	1976	Percentage of FEO stocks		Percentage change from 1975
			1975	1976	
	-Thousand metric tons-		-Percent-		
Angola	24.2	1/	3.6	1/	1/
Chile	24.0	46.3	3.5	9.3	+ 92.9
Iceland	18.9	8.2	2.8	1.7	- 56.6
Norway	130.0	120.6	19.2	24.4	- 7.2
Peru	370.4	259.7	54.7	52.4	- 29.9
South Africa	109.7	60.4	16.2	12.2	- 44.8
Total	676.9	495.2	100.0	100.0	- 26.8

1/ Not available.
2/ Estimated.
Note: 1976 figures preliminary and understated for lack of Angolan data.
Figures may not add to total because of rounding.

Source: Fish Meal Exporters Organization.

Table A10.--FEO and Denmark exports of fish meal by country of destination, January-July, 1975-76

Country	Exports		Percentage of total exports		Percentage change from 1975
	1975	1976	1975	1976	
	-Thousand metric tons-		-Percent-		
Benelux	47.5	41.5	4.6	4.4	- 12.6
France	23.8	35.5	2.3	3.8	+ 49.2
Germany, West	157.3	187.1	15.3	19.9	+ 18.9
Italy	41.6	46.3	4.0	4.9	+ 11.3
Portugal	16.4	5.0	1.6	0.5	- 69.5
Spain	18.4	1.1	1.8	.1	- 94.0
Switzerland	18.8	19.5	1.8	2.1	+ 3.7
UK/Eire	102.0	113.2	9.9	12.0	+ 11.0
Scandinavian countries 1/	56.3	70.4	5.5	7.5	+ 25.0
U.S.S.R.	22.5	7.0	2.2	.7	- 68.9
Other East European countries	298.7	208.2	29.0	22.2	- 30.3
United States 2/	40.2	38.5	3.9	4.1	- 4.2
Latin America countries 3/	61.5	45.0	6.0	4.8	- 26.8
Japan	35 7	34.1	3.5	3.6	- 4.5
Taiwan	16.2	6.7	1.6	.7	- 58.6
Singapore	11.3	2.1	1.1	.2	- 81.4
Phillippines	19.9	14.7	1.9	1.6	- 26.1
Iran	5.5	17.3	0.5	1.8	+ 214.5
Australia	3.2	6.8	.3	.7	+ 112.5
Other	33.7	39.9	3.3	4.2	+ 18.4
Total	1030.5	939.9	100.0	100.0	- 8.8

1/ Includes Denmark, Finland and Sweden.
2/ Based on export figures reported by FEO Countries.
3/ Includes Cuba.

Note: Figures preliminary and understated in 1976, for lack of Angolan data.
Figures may not add to total because of rounding.

Table All.--Broiler chick placements in 21 States, and average broiler price at the farm by month, 1966-75 average, and 1975-76

Time period	Chicks placed			Percentage change in chicks placed		Broiler price	
	1966-75 average	1975	1976	in 1975 from 1966-75 average	in 1976 from 1975	1975	1976
	Million			Percent		Cents/lb	
January	243.3	273.5	299.8	+ 12.4	+ 9.6	23.8	24.3
February	225.2	228.5	246.4	+ 1.5	+ 7.8	24.3	25.2
March	257.3	237.4	264.1	- 7.7	+ 11.2	23.5	24.4
1st quarter	725.8	739.4	810.3	+ 1.9	+ 10.0	23.9	24.6
April	251.3	241.3	272.1	- 4.0	+ 12.8	23.2	23.7
May	275.5	301.6	339.6	+ 9.5	+ 12.6	24.6	24.7
June	248.6	243.8	273.4	- 1.9	+ 12.1	27.6	24.3
2d quarter	775.4	786.8	885.1	+ 1.5	+ 12.5	25.1	24.2
July	248.2	291.2	327.4	+ 17.3	+ 12.4	29.7	25.4
August	237.6	230.5	253.8	- 3.0	+ 10.1	29.1	24.3
September	210.8	224.1	247.2	+ 6.3	+ 10.3	29.6	23.1
3d quarter	696.6	745.8	828.4	+ 7.1	+ 11.1	29.5	24.3
October	222.2	264.7	284.5	+ 19.1	+ 7.5	28.5	20.9
November	227.1	227.5		+ 0.2		27.0	
December	230.0	233.6		+ 1.6		24.0	
4th quarter	679.3	725.8		+ 6.8		26.5	
Total	2877.1	29978		+ 4.2		26.2	

Note: Figures may not add to total because of rounding.

Sources: Delmarva Broiler Chick Report, U.S. Department of Agriculture, Statistical Reporting Service, and Poultry and Egg Situation, U.S. Department of Agriculture, Economic Research Service.

Table A12.--Prices and price ratio of fish meal to soybean meal, average for September, 1959-76

Year	September wholesale prices								Price ratio	
	Menhaden 1/		Imported Peruvian 2/		Soybean 3/					
					44 percent protein		50 percent protein		Menhaden to soybean 4/	Peruvian to soybean 4/
	Actual	In 1972 dollars 5/	Actual	In 1972 dollars 5/	Actual	In 1972 dollars 5/	Actual	In 1972 dollars 5/		
	Dollars per short ton								Price ratio	
1959	124.4	184.2	128.5	190.3	51.7	76.6	56.8	84.1	2.19	2.26
1960	92.5	134.7	89.2	129.9	53.8	78.3	58.7	85.5	1.58	1.52
1961	117.8	170.0	116.5	168.2	59.6	86.0	66.0	95.3	1.78	1.76
1962	123.8	175.5	120.9	171.4	76.7	108.7	87.3	123.7	1.42	1.38
1963	125.0	174.6	117.1	163.6	75.2	105.0	82.6	115.4	1.51	1.42
1964	132.9	182.8	134.7	185.2	69.5	95.6	77.1	106.0	1.72	1.75
1965	175.0	235.5	182.5	245.6	76.8	103.3	89.2	120.0	1.96	2.04
1966	166.2	216.5	152.2	198.3	88.4	115.2	97.9	127.5	1.70	1.55
1967	136.8	173.1	128.9	163.1	79.2	100.2	87.6	110.8	1.56	1.47
1968	145.0	175.6	132.8	160.8	85.1	103.1	95.5	115.6	1.52	1.39
1969	171.6	197.9	172.0	198.3	72.7	83.8	82.7	95.4	2.07	2.08
1970	177.8	194.6	184.0	201.4	81.2	88.9	88.2	96.5	2.02	2.09
1971	160.3	166.9	159.0	165.6	73.2	76.2	80.0	83.3	2.00	1.99
1972	193.9	193.9	194.9	194.9	107.8	107.8	117.9	117.9	1.64	1.65
1973	456.6	431.6	6/	-	208.1	196.7	231.9	219.2	1.97	5/
1974	275.5	236.7	6/	-	138.1	118.6	147.8	127.0	1.86	5/
1975	259.0	203.5	259.0	203.5	133.7	105.1	144.3	113.4	1.79	1.79
1976	361.2	271.8	358.8	269.9	179.2	134.8	192.5	144.8	1.88	1.85

See footnotes at end of table 13

Table A13.--Prices and price ratio of fish meal to soybean meal, average for December, 1959-76

Year	December wholesale prices								Price ratio	
	Menhaden 1/		Imported Peruvian 2/		Soybean 3/					
					44 percent protein		50 percent protein		Menhaden to soybean 4/	Peruvian to soybean 4/
	Actual	In 1972 dollars 5/	Actual	In 1972 dollars 5/	Actual	In 1972 dollars 5/	Actual	In 1972 dollars 5/		
	Dollars per short ton								Price ratio	
1959	118.3	175.2	115.6	171.2	58.7	86.9	62.5	92.6	1.89	1.85
1960	90.0	131.1	85.1	123.9	51.2	74.6	55.0	80.1	1.64	1.55
1961	119.8	172.9	114.8	165.7	60.2	89.9	63.5	91.6	1.89	1.81
1962	130.5	185.0	126.8	179.7	70.5	99.9	75.8	107.4	1.72	1.67
1963	133.9	187.0	130.4	182.1	76.9	107.4	84.1	117.5	1.59	1.55
1964	140.8	193.6	141.5	194.6	67.8	93.2	75.5	103.8	1.86	1.87
1965	186.0	250.3	180.2	242.5	71.4	96.1	78.3	105.4	2.38	2.30
1966	153.1	199.4	152.5	198.7	84.6	110.2	92.7	120.8	1.65	1.64
1967	131.6	166.5	121.0	153.1	73.4	100.0	79.4	100.5	1.66	1.52
1968	145.1	175.7	138.1	167.2	71.6	86.7	79.4	96.2	1.83	1.74
1969	199.2	229.7	204.0	235.2	82.9	95.6	90.4	104.2	2.20	2.26
1970	187.5	205.2	186.4	204.0	82.0	89.8	88.2	96.5	2.12	2.11
1971	162.9	169.6	158.4	165.0	80.6	83.9	88.5	92.2	1.84	1.79
1972	237.5	237.5	241.0	241.0	174.0	174.0	195.0	195.0	1.22	1.24
1973	537.5	508.0	-	-	192.0	181.5	223.0	210.8	2.41	-
1974	281.0	241.4	278.5	239.2	143.4	123.2	155.8	133.8	1.80	1.79
1975	266.2	209.2	265.0	208.2	125.1	98.3	132.3	104.0	2.01	2.00
1976										

1/ 60 percent protein, bulk, f.o.b. East Coast and Gulf plants. Average prices quoted by brokers at New York City.
2/ 65 percent protein (bagged to 1969 and bulk since 1970), f.o.b. East Coast ports.
3/ Bulk at Decatur, Ill.
4/ 50 percent protein.
5/ Deflated by the implicit price deflator for GNP (1972=100).
6/ Supplies exhausted, no quotes.

Table A14.--Selected average monthly wholesale prices and price ratio of fish meal to soybean meal, 1974-76

Period	Menhaden 1/	Tuna 2/	Imported 3/ Peruvian	Northwest Europe 4/	Soybean 5/ 44% protein	Soybean 5/ 50% protein	Peruvian fish meal to soybean meal 50% protein
	Dollars per short tons						Price ratio
1974							
January	6/ 532.50	415.25	7/	549.76	172.00	192.40	8/ 2.77
February	6/ 452.20	357.50	7/	416.40	160.00	175.25	8/ 2.58
March	403.75	276.72	7/	458.13	147.10	160.40	8/ 2.52
April	342.00	251.62	7/	354.71	117.20	130.40	8/ 2.62
May	273.10	257.81	7/	367.41	109.25	120.00	8/ 2.28
June	263.00	222.06	7/	294.83	100.00	110.50	8/ 2.38
July	243.50	190.57	7/	254.01	138.10	147.10	8/ 1.66
August	9/ 314.35	9/ 246.81	7/	279.42	155.90	165.90	8/ 1.89
September	275.50	203.50	7/	253.11	138.10	147.25	8/ 1.87
October	301.25	220.00	7/	287.58	168.20	179.80	8/ 1.68
November	297.50	220.00	297.50	266.72	141.00	154.00	1.93
December	281.00	220.00	278.50	268.53	143.40	155.80	1.79
Average	331.66	265.15	288.00	337.55	140.85	153.30	8/ 2.16
1975							
January	263.12	220.00	6/ 262.50	251.29	129.20	137.90	1.90
February	231.25	207.96	6/ 231.90	205.02	117.25	126.90	1.83
March	220.50	193.88	220.50	201.40	117.75	126.50	1.74
April	238.75	206.25	240.00	216.82	122.00	131.80	1.82
May	226.87	207.62	223.12	197.77	118.50	129.00	1.73
June	218.75	211.80	216.25	192.32	120.90	130.75	1.65
July	234.50	213.78	226.25	204.12	124.00	134.20	1.69
August	246.25	219.66	255.83	215.00	134.40	144.20	1.78
September	259.00	218.74	259.00	206.84	133.70	144.30	1.79
October	266.25	202.12	265.00	235.87	125.90	135.90	1.95
November	6/ 269.38	198.00	265.00	271.25	119.90	126.80	2.09
December	6/ 266.25	201.50	265.00	273.06	125.10	132.30	2.00
Average	245.07	208.44	244.20	222.56	124.05	133.40	1.83
1976							
January	6/ 268.75	201.00	270.00	274.88	128.25	136.25	1.98
February	6/ 270.00	206.94	270.62	275.79	132.60	139.25	1.94
March	6/ 273.75	210.87	271.25	273.97	127.90	135.60	2.00
April	253.12	210.25	270.62	274.88	127.10	136.40	1.98
May	283.00	217.25	285.00	300.28	152.25	161.75	1.76
June	353.00	273.30	344.00	336.57	187.90	200.30	1.76
July	385.00	299.13	381.25	367.96	193.90	207.88	1.83
August	324.00	275.00	348.00	360.61	170.62	187.10	1.86
September	361.25	280.25	358.75	402.79	179.38	192.50	1.86
October	6/ 361.88	272.94	351.88	404.38	169.62	182.00	1.93

1/ 60 percent protein, bulk, quoted by brokers at New York City, f.o.b. East Coast and Gulf plants.
2/ 55 percent protein, bulk, Los Angeles. To March 1975 known as tuna and mackerel, now known also as tuna-mix. Prior to July 1975 reported with 60 percent protein content. 1974 to July 1975 prices, therefore, were converted to reflect 55 percent protein content.
3/ 65 percent protein, bulk f.o.b., East Coast ports.
4/ 65 percent protein, any origin, c & f Hamburg, West Germany.
5/ Bulk at Decatur, Ill.
6/ Nominal price.
7/ Supplies exhausted, no quotes.
8/ Ratio of menhaden meal to soybean meal price.

Source: For Hamburg prices; Oil World, ISTA Mielke & Co. Hamburg, West Germany.
For soybean meal prices: Feed Market News, U.S. Department of Agriculture, Consumer and Marketing Service, Grain Division.

Table A15.--Fish solubles production and imports, January-September, and menhaden solubles prices, September, 1959-76

Year	Production			Imports	Total	Price	
	Menhaden	Other	Total			Actual 1/	In 1972 dollars 2/
	Thousand short tons					Dollars per short ton	
1959	92.6	22.1	114.7	21.2	135.9	58.70	86.9
1960	57.6	19.0	76.6	2.8	79.3	37.50	54.6
1961	63.9	20.4	84.3	2.5	86.8	49.69	71.7
1962	71.5	22.4	93.9	5.2	99.1	55.38	78.5
1963	64.5	19.9	84.4	3.3	87.6	64.12	89.6
1964	62.1	19.6	81.6	3.9	85.5	61.20	84.2
1965	64.7	16.3	80.9	3.8	84.6	61.25	82.4
1966	51.8	18.4	70.2	3.8	73.9	72.50	94.4
1967	42.6	18.5	61.0	3.3	64.3	61.25	77.5
1968	43.9	14.6	58.5	1.5	60.0	51.88	62.8
1969	53.8	13.5	67.3	0.1	67.4	48.75	56.2
1970	61.7	16.7	78.4	0.4	78.8	48.70	53.3
1971	80.1	15.0	95.1	-	95.1	45.05	46.9
1972	85.4	23.4	108.8	0.1	108.9	42.80	42.8
1973	91.5	20.0	111.5	0.3	111.8	128.50	121.4
1974	92.5	22.7	115.2	-	115.2	80.50	69.2
1975	75.9	28.3	104.3	-	104.3	66.00	51.9
1976	89.9	25.7	115.6	0.7	116.3	3/ 27.50	95.9

See footnotes at end of table 16

Table A16.--Fish solubles production and imports, October-December, and menhaden solubles prices, December, 1959-76

Year	Production			Imports	Total	Price	
	Menhaden	Other	Total			Actual 1/	In 1972 dollars 2/
	Thousand short tons					Dollars per short ton	
1959	15.5	6.5	22.0	5.4	27.4	47.75	70.7
1960	8.3	4.5	12.8	0.3	13.1	35.62	51.9
1961	9.4	6.8	16.2	4.2	20.4	57.18	82.5
1962	13.7	5.6	19.3	1.1	20.4	64.17	91.0
1963	10 3	5.5	15.8	3.8	19.6	75.66	105.7
1964	6.7	5.0	11.6	0.6	12.2	61.25	84.2
1965	8.5	5.4	13.9	1.4	15.3	66.25	89.1
1966	9.0	4.3	13.3	0.5	13.8	81.88	106.7
1967	9.2	4.4	13.6	0.4	14.0	60.00	75.9
1968	9.4	3.9	13.3	0.3	13.6	51.25	62.1
1959	9.4	4.9	14.3	0.1	14.4	52.50	60.5
1970	10.2	6.4	16.6	-	16.6	49.70	54.4
1971	11.4	4.7	16.1	-	16.1	42.50	44.3
1972	18.6	7.0	25.6	-	25.6	72.50	72.5
1973	12.9	13.0	25.9	-	25.9	150.00	141.8
1974	10.4	11.6	22.0	-	22.0	84.00	72.2
1975	7.7	15.9	23.5	-	23.5	3/ 74.69	58.7
1976 4/	7.0	14.0	21.0	-			

1/ In tank cars; average price quoted by brokers at New York City; f.o.b. East Coast plants.
2/ Actual price divided by the implicit price deflator for GNP (1972=100).
3/ Nominal.
4/ Estimated.

Note: Figures may not add to total because of rounding. 1976 figures subject to revision.

Table A17.--Production and average price of fish solubles, by month

Month	Production			Price 1/		Menhaden meal to menhaden solubles	
	1965-75 average	1975	1976	1975	1976	1975	1976
	Thousand short tons			Dollars per short ton		Price ratio	
January	1.4	3.3	3.2	86.25	2/ 75.00	3.05	3.58
February	1.4	1.5	1.3	77.50	2/ 75.00	2.98	3.60
March	2.3	2.8	4.2	75.00	80.62	2.94	3.39
1st quarter	5.1	7.6	8.7	79.58	76.87	2.99	3.52
April	5.0	7.0	8.2	73.75	79.38	3.23	3.19
May	11.4	20.3	10.3	71.25	93.75	3.18	3.02
June	17.4	19.9	19.7	64.06	118.50	3.41	2.98
2d quarter	33.8	47.2	38.2	69.69	97.21	3.27	3.06
July	18.7	21.2	23.3	63.50	138.75	3.69	2.77
August	17.5	14.0	24.1	61.88	2/ 128.00	3.98	2.53
September	11.8	14.2	21.4	66.00	2/ 127.50	3.92	2.83
3d quarter	48.0	49.4	68.8	63.79	131.41	3.86	2.71
October	8.8	14.8		71.88	2/ 127.50	3.70	2.84
November	5.9	4.0		2/ 73.12		3.68	
December	3.7	4.7		2/ 74.69		3.56	
4th quarter	18.4	23.5		73.23		3.65	
Total	105.5	127.8					
Average				3/ 66.40			

1/ Menhaden solubles in tank cars; price quoted by brokers at New York City, f.o.b. East Coast plants.
2/ Nominal price.
3/ Weighted average.

Note: Figures may not add to total because of rounding.
1976 figures subject to revision.

Table A18.--Fish oil production, exports, domestic industrial use, and total disappearance for January-September and average prices of fish and soybean oil, September 1959-76

Year	Fish oil production 1/			Exports 2/	U.S. industrial utilization 1/	Total disappearance	Net stock change	Menhaden oil 3/	Fish oil 4/ European ports	Soybean 5/ oil	Menhaden soybean oil
	Menhaden	Other	Total								
	Million pounds							Cents per pound			Price ratio
1959	119.8	24.9	144.7	104.5	44.0	148.5	- 3.8	7.2	6/	9.1	.79
1960	143.2	19.8	163.0	108.8	42.5	151.3	+ 11.7	6.2	6/	9.2	.67
1961	202.7	15.3	218.0	95.4	48.7	144.1	+ 73.9	5.4	6/	10.5	.51
1962	192.2	13.1	205.3	96.5	47.8	144.3	+ 61.0	4.1	6/	8.1	.51
1963	139.9	14.7	154.6	187.0	39.4	226.4	- 71.8	7.3	6/	8.5	.86
1964	140.9	16.5	157.4	120.4	36.8	157.2	+ 0.2	9.1	9.1	9.7	.94
1965	158.4	14.5	172.9	81.0	32.1	113.1	+ 59.8	9.5	9.9	11.4	.83
1966	117.5	14.5	132.0	72.8	30.5	103.3	+ 28.7	9.4	6.9	12.3	.76
1967	77.6	13.8	91.4	66.6	28.3	94.9	- 3.5	5.8	5.1	9.3	.62
1968	118.1	14.0	132.1	30.1	23.5	53.6	+ 78.5	4.4	4.2	7.5	.59
1969	129.1	11.9	141.0	130.1	25.0	155.1	- 14.1	6.1	6.4	9.7	.63
1970	164.4	11.1	175.5	135.8	25.1	160.9	+ 14.6	9.7	10.8	12.1	.80
1971	223.6	14.7	238.4	180.4	20.3	200.7	+ 37.7	9.2	9.9	12.8	.72
1972	153.1	14.7	167.8	114.9	22.7	137.6	+ 30.2	7.8	9.2	9.8	.80
1973	187.3	13.6	200.9	160.7	19.7	180.4	+ 20.5	11.5	15.5	24.3	.47
1974	207.6	13.3	220.9	137.9	26.2	164.1	+ 56.8	25.0	25.4	40.7	.61
1975	195.7	19.4	215.1	119.6	26.2	145.8	+ 69.3	15.0	13.9	24.3	.62
1976	188.0	17.1	205.1	141.3	29.5	170.8	+ 34.3	18.0	18.6	22.4	.80

1/ Excludes whale and sperm oils.
2/ Does not include foreign fish oil.
3/ Crude oil in tank cars; average price quoted by brokers at New York City, f.o.b. East Coast plants.
4/ Any origin, crude, CIF, North Western Europe.
5/ Crude, tank cars, f.o.b. at Decatur, Ill.
6/ Not available.

Note: Figures may not add to total because of rounding; 1976 production figures subject to revision.

Table A19.--Fish oil production, exports, domestic industrial use and total disappearance for October-December, and average prices of fish and soybean oil, December, 1959-76

Year	Fish oil production 1/			Exports 2/	U.S. industrial utilization 1/	Total disappearance	Net stock change	Menhaden oil 3/	Fish oil 4/ European ports	Soybean 5/ oil	Menhaden soybean oil
	Menhaden	Other	Total								
	-Million pounds-							-Cents per pound-			-Price ratio-
1959	34.9	3.6	38.5	40.0	14.6	54.6	- 16.1	7.2	6/	7.8	.92
1960	40.2	2.2	42.4	34.8	14.3	49.1	- 6.7	6.0	6/	10.0	.60
1961	32.5	4.1	36.6	27.1	16.1	43.2	- 6.6	4.9	6/	10.5	.47
1962	45.6	2.3	47.9	26.5	15.1	41.6	+ 6.3	4.0	6/	8.6	.46
1963	27.7	3.5	31.2	75.3	12.7	88.0	- 56.8	8.0	6/	8.3	.96
1964	16.8	2.8	19.6	31.0	10.9	41.9	- 22.3	9.4	9.8	12.0	.78
1965	16.8	3.1	19.9	22.8	12.4	35.2	- 15.3	9.5	9.6	11.2	.85
1966	26.7	4.0	30.7	4.5	8.3	12.8	+ 17.9	8.9	7.6	10.6	.84
1967	23.8	4.7	28.5	10.2	7.5	17.7	+ 10.8	6.0	5.0	8.6	.70
1968	33.9	5.6	39.5	35.0	6.5	41.5	- 2.0	4.4	5.1	8.1	.54
1969	20.0	7.0	27.0	66.0	9.1	75.1	- 48.1	8.5	10.3	9.6	.88
1970	21.9	7.7	29.6	23.0	6.3	29.3	+ 0.3	10.6	12.4	12.4	.85
1971	20.4	6.2	26.6	49.5	6.2	55.7	- 29.1	8.5	8.1	11.7	.73
1972	13.9	6.7	20.6	78.3	7.1	85.4	- 64.8	8.9	9.6	9.7	.92
1973	13.2	10.5	23.7	88.2	5.8	94.0	- 70.3	7/	21.1	26.0	-
1974	9.4	7.7	17.1	61.2	8.8	70.0	- 52.9	25.0	24.2	38.0	.66
1975	17.6	13.0	30.5	72.3	10.7	83.0	- 52.9	15.5	15.1	16.8	.92
1976 8/			25.0	80.0	9.6	89.6	- 64.6				

1/ Excludes whale and sperm oils.
2/ Does not include foreign fish oil.
3/ Crude oil in tank cars; average price quoted by brokers at New York City, f.o.b. East Coast plants.
4/ Any origin, crude, CIF, North Western Europe.
5/ Crude, in tank cars, f.o.b. at Decatur, Ill.
6/ Not available.
7/ No quotes, supplies exhausted.
8/ Estimated.

Note: Figures may not add to total because of rounding.

Table A20.--U.S. production of fish oil, by month, 1966-75 average, and 1975-76

Time period	Anchovy			Menhaden			Tuna and mackerel			Other			Total		
	1966-75 average	1975	1976	1966-75 average	1975	1976	1966-75 average	1975	1976	1966-75 average	1975	1976	1966-75 average	1975	1976
	Million pounds														
January	0.4	1.3	1.0	-	-	0.1	0.3	0.3	0.5	0.3	0.2	0.2	0.9	1.8	1.8
February	.1	0.2	-	-	-	-	.2	.2	.4	.2	.1	.1	.5	0.6	0.6
March	-	.1	0.6	-	-	-	.4	.6	.6	.3	.3	.1	.7	.9	1.4
1st quarter	.5	1.6	1.7	-	-	0.1	.9	1.1	1.5	.8	.6	.4	2.2	3.3	3.7
April	.2	.4	.4	4.2	2.6	8.8	.4	.5	.5	.6	.3	.2	5.3	3.9	10.0
May	.1	.6	.1	21.4	36.5	16.5	.4	.4	.5	.7	1.6	1.4	22.7	39.1	18.5
June	-	-	-	33.8	37.2	32.9	.4	.4	.5	1.0	1.9	1.5	35.3	39.5	35.0
2d quarter	.3	1.0	.5	59.4	76.3	58.3	1.3	1.4	1.5	2.3	3.7	3.2	63.3	82.5	63.5
July	-	-	-	39.0	53.5	46.9	.5	.5	.6	1.9	2.3	2.0	41.4	56.2	49.5
August	.1	-	-	35.9	33.2	44.5	.6	.8	5.7	2.0	2.4	2.1	38.5	36.5	47.3
September	.5	1.1	.7	23.1	32.6	38.2	.6	.7	.6	2.0	2.2	1.9	26.2	36.7	41.4
3d quarter	.6	1.1	.7	98.0	119.4	129.6	1.6	1.9	1.9	5.9	6.9	6.0	106.0	129.4	138.2
October	1.2	3.2		11.5	15.1		.6	1.0		1.3	1.4		14.6	20.7	
November	1.4	2.3		6.2	2.0		.5	.6		.5	.4		8.6	5.3	
December	1.0	3.5		2.3	0.5		.4	.5		.4	.1		4.1	4.6	
4th quarter	3.7	9.0		20.1	17.6		1.5	2.1		2.2	1.8		27.4	30.5	
Total	5.0	12.9		177.5	213.3		5.2	6.4		11.2	13.1		198.9	245.6	

Note: Figures may not add to total because of rounding.
1976 figures subject to revision.

Table A21.--U.S. exports, domestic industrial use, and total disappearance of fish oil, by month, 1966-75 average, and 1975-76

Time period	Exports 1/			Domestic disappearance 2/			Total disappearance		
	1966-75 average	1975	1976	1966-75 average	1975	1976	1966-75 average	1975	1976
	Million pounds								
January	10.4	13.0	9.0	2.4	2.6	2.9	12.8	15.6	11.9
February	4.7	0.1	1.1	2.6	2.1	3.1	7.3	2.2	4.2
March	8.0	.1	3.2	2.5	2.3	3.3	10.5	2.4	6.5
1st quarter	23.1	13.2	13.3	7.5	7.0	9.3	30.6	20.2	22.6
April	3.8	4.7	0.1	2.8	2.5	3.7	6.6	7.2	3.8
May	5.4	.1	5.2	2.6	2.4	3.3	8.0	2.5	8.5
June	14.0	33.8	12.4	2.9	2.9	3.5	16.9	36.7	15.9
2d quarter	23.0	38.6	17.7	8.3	7.8	10.5	31.5	46.4	28.2
July	23.4	29.1	33.1	2.8	3.2	2.3	26.2	32.3	35.4
August	28.0	33.9	35.0	3.0	4.2	3.4	31.0	38.1	38.4
September	17.1	4.8	42.1	3.1	4.0	4.0	20.2	8.8	46.1
3d quarter	68.5	67.8	110.2	8.9	11.4	9.7	77.4	79.2	119.9
October	19.3	14.2		2.6	3.9		21.9	18.1	
November	12.2	18.9		2.6	3.7		14.8	22.6	
December	17.3	39.2		2.4	3.0		19.7	42.2	
4th quarter	48.8	72.3		7.6	10.6		56.4	82.9	
Total	163.7	191.9		32.3	36.8		196.0	228.7	

1/ Excluding whale oil.
2/ Includes marine mammal oil other than sperm oil and some hydrogenated fat (vegetable and animal) and other fats and oils in process.

Note: Figures may not add to total because of rounding.
Source: Bureau of the Census. Current Industrial Report. Fats and Oils, Production Consumption and Stocks Series: M20K (66-76). U.S. Department of Commerce, Bureau of the Census.

Table A22.--Selected average monthly fish oil prices and price ratio of menhaden oil to soybean oil, 1974-76

Time period	Anchovy 1/	Menhaden 2/	Tuna and mackerel 3/	Northwest Europe 4/	Soybean 5/	Menhaden oil to soybean oil
	-Cents per pound-					-Price ratio-
1974						
January	15.6	21.0	7.1	23.1	28.6	.73
February	15.5	21.2	9.0	23.4	36.4	.58
March	6/	23.2	12.0	25.3	30.2	.77
April	6/	25.7	6/	25.6	28.2	.91
May	6/	6/	11.0	26.6	29.4	-
June	6/	25.0	11.0	25.3	31.6	.71
July	6/	25.4	12.3	24.5	40.5	.63
August	6/	26.0	12.8	27.0	43.3	.60
September	6/	25.0	13.0	25.4	40.7	.62
October	6/	24.9	14.0	26.8	42.8	.58
November	20.8	26.0	15.3	26.6	40.4	.64
December	22.7	25.0	15.4	24.2	28.0	.66
Average	18.6	24.4	12.1	25.3	35.8	.68
1975						
January	20.0	25.0	15.5	23.1	33.6	.74
February	18.9	7/ 20.0	15.5	19.2	29.4	.68
March	15.2	6/	10.0	16.6	29.1	-
April	15.0	6/	7.2	14.9	28.2	-
May	15.0	13.5	7.4	12.8	23.6	.57
June	15.0	13.0	7.5	13.0	23.3	.56
July	6/	13.5	7.5	14.7	27.5	.49
August	6/	14.6	7.5	14.6	28.4	.51
September	14.5	15.0	7.6	13.9	24.3	.62
October	14.1	15.2	7.7	14.1	21.4	.71
November	13.1	15.2	7.1	15.1	18.9	.80
December	11.6	15.5	6.8	15.1	16.8	.92
Average	15.2	16.0	8.9	15.6	25.4	.66
1976						
January	12.5	6/	7.6	14.6	16.2	-
February	12.5	6/	8.0	14.7	16.3	-
March	6/	15.2	6/	15.2	16.6	.92
April	6/	15.2	8.0	14.8	16.3	.93
May	6/	15.4	6/	15.3	15.8	.97
June	6/	15.4	6/	16.6	17.3	.89
July	6/	18.0	6/	18.5	20.9	.86
August	14.0	16.6	6/	17.2	20.4	.81
September	14.0	18.0	6/	18.6	22.5	.80
October	14.0	18.7	6/	19.0	20.7	.90
November						
December						

1/ Crude oil, f.o.b. Los Angeles.
2/ Crude oil in tank cars; f.o.b. East Coast plants.
3/ Crude oil, f.o.b. plant , Los Angeles.
4/ Crude oil, any origin.
5/ Crude, tank cars, f.o.b. at Decatur, Ill.
6/ Supplies exhausted, no quotes.
7/ Nominal price.

Sources: For NW. Europe prices; Oil World ISTA Mielke & Co., Hamburg, West Germany.
For soybean oil prices; Fats and Oil Situation, U.S. Department of Agriculture.

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